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NOTICE!

IMPORTANT!

NEXT MONTH'S JOURNAL

WILL

CONTAIN

A

MOST

IMPORTANT

ANNOUNCEMENT

RELATING

TO

MEDICAL DEFENSE

INDEMNITY

THE CONSERVATION OF VISION.*

By GEORGE H. KRESS, M. D., Los Angeles; Chairman of the Conservation of Vision Committee of the Medical Society of the State of California.

Blindness, partial or complete, can seriously handicap a fellow being throughout life, subjecting him not alone to physical misery, but oftentimes also to economic retrogression or relegation. The campaign for the conservation of vision is, therefore, becoming more and more the recipient of serious attention and action by the medical profession, the laity, and the officials of our city, State and national governments.

It may be said that only in recent years has the economic loss accruing from partial or complete blindness really begun to dawn upon us; but in the brief period during which the conservation of vision campaign has been on, the facts and figures which have been gathered are so conclusive and illuminating that there can be no longer any doubt existant as to necessity of action. The proposition now before us is one of methods to be adopted, and of securing the wherewithal with which to put them into force.

For convenience in the discussion of our subject, it will be here dealt with under the three heads of:

1. *Refractive Errors*, or defects of vision, which should be attacked and corrected, if possible, during school age;

2. *Diseases of the Eyes*, which are apt to lead to blindness, with all the economic and personal horror which the word blindness implies, the particular disease here to be discussed being that of gonorrhea; and

3. *Injuries to the Eyes*, the group of shop accidents being here especially referred to.

I. REFRACTIVE ERRORS.

Returning now to the first major group of eye defects just enumerated, namely of refractive errors, particularly those of school children, we are at once confronted with the fact that about seventy per cent. of all school children have physical defects of some type, and that these physical defects of various kinds seriously handicap these children in their physical and mental growth; and that resulting therefrom there is an increased expenditure by the State to give such backward children their education, as well as the other fact that such backward children fall to or take a lower place on the social or economic scale, in case these defects be not remedied, than would otherwise be the case.

The above state of affairs being true, we are, therefore, brought face to face at once with the fact that physical defects of the race have a most important relationship, not only to the happiness and prosperity of individual citizens, but to the welfare of the nation as a whole.

But unfortunately, just as in the case of some of the infectious diseases like tuberculosis, many of those who are already afflicted with defects of vision can have comparatively little done for them; so that the problem in preventive medicine which here confronts us in our conservation of vision campaign is one that must especially aim to reach

* Read before the Eighth Congress of the American School Hygiene Association, Saturday, June 26, 1915, San Francisco, Cal.

the rising generation of Americans, in order that both the causes and consequences of defective vision may be prevented from coming into being.

With about one-fifth of our population of school age (which means in the United States a population of about twenty million school children), and about fifteen million of these children suffering from physical defects of one kind or another, it has been estimated that one-fourth of these millions of school children, namely, about five million of our school children, belong to the group who have defects of vision of one type or another.

Now our schools are estimated to cost about five hundred million dollars per year for maintenance, and granting that backward children who do not advance mentally as they should, mean an increased outlay of money, inasmuch as they require more teachers, and also hold back the classes as a whole, then it follows that with one-fourth of our school children having defects of vision, a considerable portion of this five hundred million dollars annually spent on their education, is not giving the best of results.

In other words, through non-attention to these defects of vision, there is annually spent on the education of these children, much more money than the prevention or cure of these defects would cost.

And that is the particular thought which we must emphasize with our boards of education and other officials of the State, and with the laity whose interest and co-operation we would have in the solution of this problem.

We must show these lay officials and fellow citizens by actual facts and figures, that they are wasting much money and throwing many dollars away, when they refuse to remedy physical defects of school children, if we would secure their full co-operation and assistance in bringing into existence a better state of affairs.

Once the economic waste of foolishly expended public moneys reaches the consciousness of the great mass of taxpayers, it will be time enough to accentuate somewhat the individual misery accumulated in the lives of those who are unnecessarily condemned to actual or partial, or what might be called economic blindness, and their correlated train of pinched or straitened financial circumstances, with existence, in many cases, on an underserved lower social and economic plane.

Or, again, putting the thought in different language, altruistic doctrines along this line will receive a fuller support if our taxpaying fellow citizens realize that taxes will be reduced or conserved, at the same time that vision, for instance, is conserved.

Of the five hundred million dollars annually spent for the education of our school children, it is estimated that about one hundred million dollars annually (or about one-fifth of the total spent) is expended on about three million children (threetwentieths of all school children) who have physical defects sufficiently grave to cause them to fall behind in their studies, and who are known as "repeaters." The unfortunate influence of these backward children on their fellow pupils who could make a more rapid mental advance, and the sad results of these defects upon the whole after-lives

of these unfortunate child victims themselves, are altogether too great and too sad to be lightly passed over.

Such a sum of one hundred million dollars, now spent on these defective children, could be far more wisely expended, if it were concentrated on the eradication and prevention of the physical defects responsible for the tardy progress of so many of our school children.

In discussing this elimination of physical defects among our school children, we must at the outset, recognize how closely this work of eradication is related to the medical inspection of school children. We should appreciate also that this medical inspection should not limit itself alone to the children, but should include also the school house environments, in which the children spend so many of their hours of youth. With school houses properly constructed, from the standpoint of sanitation, and the children instructed concerning the hygienic principles involved and applied, one may expect to carry to and help put into effect in the homes of the children, the principles involved in house and personal hygiene. And even if this be not always possible, because of the stubbornness or ignorance of the adult members of the family group, there is still the hope and possibility that these children, when coming into homes of their own, will later apply the principles learned during their school years.

Hygienically constructed school buildings, with special attention to good ventilation, proper lighting arrangements, suitable grouping of blackboards, kinds and height of desks, as well as properly balanced curricula, are some of the factors to be noted in connection with the above.

To get good air and light into a school building implies that adjacent buildings must not be too close (that is, should be a distance of about twice their height away from adjacent school buildings), and the space so cleared can serve a further good purpose as a school playground.

Roughly calculated, a school room should have about fifteen square feet of floor space and about one hundred cubic feet of air space per pupil.

Light should come preferably from the rear and from the left of the pupils, and the window space should ordinarily be at least fifteen or twenty per cent. of the floor space. Windows should have transoms above for ventilation, practically flush with the ceilings, and in large cities where because of property values or the atmospheric conditions, it is not possible to get as good light as usual, recourse may be had to use of some of the so-called prism glasses, or to artificial lighting of the indirect type, although neither of these latter plans is to be especially advocated. The tinting of the walls with the lighter colors of green and gray, for instance, also helps. Blackboards or unglazed surface should be placed away from the source of light.

The above are all matters closely related to the comfort, the health, and therefore also to the mental development of school children; and all medical inspection should include the systematic observation and report on the above and related

factors, in addition to the regular work of inspection of the school children themselves.

It is most gratifying to all who are interested in the proper development of our race, to note the great progress made in medical inspection in schools since its advent as an official movement in France about 1884, and in our own country since its beginning in New York City in 1892, about twenty-three years ago.

The splendid results accomplished during this brief period may be taken as an index of what the future holds in store, not only for our schools, but for our nation.

It should be remembered that phases of this so-called medical inspection work have become so well developed that school nurses can be taught to do effective service where physicians cannot be employed, and that where even school nurses are not available, a little time given by the teachers themselves can give most effective returns.

It has been shown, for instance, that the expense of the examination for defects of eyes, ear, nose and throat, if done by teachers, need not cost a city of 10,000 persons, a greater sum than twenty dollars for its entire school population. Surely, twenty dollars is not an excessive sum to ask in a city of 10,000 persons to spend in an effort to learn what children of those citizens have physical defects worthy of attention and eradication.

The great importance of defects of vision, especially when of considerable degree, lies in the fact that such children fall behind in their classes, grow out of touch with their school work, learn to dislike or hate it, and then drop out of school to plunge into occupational activity for which they are ill-fitted, and because of which mental immaturity they handicap their entire economic and social future; or if they start their career in truancy, drift, perhaps, into the sad group of the vicious or even of the criminal.

As to the examinations of children's eyes, the chart devised by Dr. Frank Allport of Chicago, Chairman of the Conservation of Vision Committee of the American Medical Association, is a simple and yet very effective type, and especially where the work is to be done by a school nurse or a teacher. These splendid charts may be obtained from F. A. Hardy and Company, Chicago, Illinois, at a price of twenty-five cents each for a single copy, or of seven cents each in lots of more than ten.

The questions which are asked concerning vision, in this chart, and which show how simple is the information required to demonstrate the presence of most defects of vision, are the following:

1. Does the pupil habitually suffer from inflamed lids or eyes?
2. Does the pupil fail to read a majority of the letters of the number 20 line of Snellin's Test Types (printed on the chart) with either eye?
3. Do the pupil's eyes and head habitually grow weary and painful after study?
4. Does the pupil appear to be cross-eyed?

The above simple questions and tests practically determine a defect of the eyes or of vision, and the child is then to be sent to a specialist or to an eye clinic where a thorough examination may be made,

with the eyes, if necessary, under the influence of a cycloplegic, and the proper glasses, if needed, ordered, or other defects remedied.

A sample of the Allport Chart, which is passed around, gives a further insight into its scope.

2. DISEASES OF THE EYES.

Turning now to the second major topic or group of eye defects to be considered in our outline, we are confronted with the venereal disease known as gonorrhea, which, when it attacks the infant, is known by the more familiar name of ophthalmia neonatorum.

The horror of this disease is its virulence and the intensity of the inflammatory process which it calls into being, so that when an eye is so attacked, it is, even under the best of treatment, always in danger of being destroyed.

It is estimated that this disease is responsible for from fifteen to twenty-five per cent. of all the blind persons in our country.

Leaving out of account the horror of the darkness in which these unfortunate persons must dwell, we are here also confronted with a splendid example of economic waste.

Thus, as regards education, the State usually must annually pay about ten times as much (or about \$340.00) as against the lesser cost of educating a child not blind (which is only about \$30.00). The cost to the State of a dependent blind person has been estimated to be about \$10,000.00, so that with almost 100,000 blind persons in our country, there is a yearly expenditure of millions of dollars in the care of such persons by the State.

Contrast now the expenditure of the above millions of dollars, on care after the mischief is done, with that accruing through the use of a one or two per cent. solution of silver nitrate, applied to the eyes of all new-born infants, and by means of which treatment this horrible and pathetic disease could be practically prevented. If a single penny will protect the eyes of two new born children from blindness, how utterly foolish and cruel not to so expend it, instead of spending much greater sums for the care of the thousands of dependent blind, who become blind because such treatment was not given, and whose lives are often filled with days of misery as well as of perpetual darkness.

We should, therefore, educate the public to demand the use of this silver nitrate preventive solution by physicians and midwives, and have laws to enforce its use, as well as arrangements for its distribution through State and other boards of health, so as to make the use of this one per cent. silver nitrate solution easy and universal in all medical and midwifery practice.

3. OCCUPATIONAL INJURIES.

The third group of factors causing blindness, to be here briefly noted, are those relating to injuries.

This portion of our subject can be briefly covered by simply stating that in all occupations where foreign particles, such as fragments of steel, or particles of molten metal, acids, or other caustics are liable to fly off from tools or implements or other apparatus, that our laws should insist that

protective glasses be given the workingmen, and that protecting shields as well as signs calling attention to the liability and special danger of such apparatus be in evidence and in use in all such shops.

The workingman should likewise be educated not to permit a fellow workman to attempt to remove such foreign particles once they become lodged in the eye, lest infection, serious direct damage, or the danger from delay in serious injuries, lead to grave danger to the integrity of the injured eye.

Happily, our State compensation laws, now coming into operation in many of our commonwealths, are in this connection bringing about a much better state of affairs than formerly, for now the employer, the insurance companies, and the workingmen themselves all find it to their individual and joint advantage to pay some attention to these matters.

The above are a few phases of the conservation of vision movement, and they indicate why this propaganda should appeal to all who have the comfort and happiness of the individual, and the welfare of the State at heart. It is gratifying to know, too, that each year, real advance is being made in the solution of this great problem; and with a consistent, persistent, educational campaign, there need be but little doubt that there will be a decided decrease in the incidence of blindness, and of accidents or visual defects, which are now so frequently responsible for partial or total loss of vision, with all the attendant horrors of blindness and of the misery associated with cosmetic or economic inferiority.

HUMAN CASES OF RABIES IN CALIFORNIA AND THEIR TREATMENT.*

By J. C. GEIGER, M. D., Bureau of Communicable Diseases, Berkeley.

The first case of rabies in human beings in California occurred in March, 1899, and was reported by Radebaugh.¹ The remaining cases, 33 in all, occurred during the epidemic of rabies that, since 1909, has swept completely through California. Colburn,² Black and Powers,³ Sawyer,^{4,5} and myself⁶ reported that up to April 1, 1913, the toll of human deaths from rabies in California was 18. Between April 1, 1913, and March 31, 1916, there were 15 cases. These are as follows:

1. A. C., a man, age 23 years, died of rabies on May 22, 1913, in San Francisco.

The patient had been bitten by a dog about two months before. Portions of the brain tissues were examined at the laboratory of the San Francisco Health Department and at the State Hygienic Laboratory, and many large Negri bodies were found. Animals inoculated with emulsion of the brain came down with characteristic symptoms of rabies.

2. J. B., a child, age 4, died of rabies in San Francisco, May 26, 1913.

She had been severely bitten on April 25th by a dog which was found positive on microscopical examination at the laboratory of the San Francisco Board of Health. The bite on the face, about one inch below the right eye, was severe. It was

cauterized within an hour, and the child was placed under the Pasteur treatment within 24 hours. On May 20th, four days after completion of the treatment, she became ill, the principal symptoms being fever. On May 23rd, her temperature reached 105.2. The patient was restless and nervous, sleeping at intervals, but was able to take both milk and water. On May 25th, when given small quantities of liquid, she showed marked distress upon attempting to swallow.

Parts of the brain tissue were sent to be examined at the laboratory of the San Francisco Board of Health and the State Hygienic Laboratory. Negri bodies were found on microscopical examination and rabies produced in rabbits by inoculation with the brain tissue.

3. C. R. L., a man, age 30, residing near Sebastopol, in Sonoma county, died of rabies at Santa Rosa, September 17, 1913.

The patient was bitten deeply on his right wrist by his dog on August 12, 1913, while hunting. The dog had been acting queerly. The first symptoms of rabies in this case appeared September 13th. The patient consulted his physician, stating that he had not been able to sleep because of pain in both arms and shoulders and in the back of his neck. The patient was rational, but seemed nervous and uneasy. He was able to drink fluids but had difficulty in swallowing. His physician telephoned to the State Hygienic Laboratory and was informed of the announcement of Moon⁸ in the Journal of Infectious Disease that massive doses of quinine had cured rabies in dogs after symptoms had been pronounced. Quinine in 40 grain doses in physiological salt solution was administered intramuscularly, on September 16th. In the evening, the same dose was repeated intravenously. At this time, the patient could drink with great difficulty. On the morning of September 17th, another 40 grains of quinine were given intravenously, making 120 grains of quinine given, 80 of which intravenously, 12 hours apart. Later in the morning the patient was entirely unable to swallow fluid. The patient died, following prolonged convulsions.

Portions of the brain tissue were sent to the State Hygienic Laboratory for examination. Microscopical examination of the hippocampus showed many intracellular Negri bodies within the ganglion cells, and rabies was produced in rabbits by inoculation with the brain tissue.

4. F. I. W., a child, aged 5½ years, died of rabies, in New Castle, Placer County, on July 25, 1913. The patient was bitten on the arm by a strange dog on July second. Rabies was not suspected in the dog. On July 23rd, the patient showed a general nervous irritability, with vomiting at frequent intervals. The patient evidenced great desire for water. Saliva drooled from the mouth throughout the day. Pupils were dilated. On July 24th, she showed extreme restlessness with beginning incoherent speech and movements. She had a temperature of 104 at 4 p. m. That evening, there was marked delirium and patient picked at bed clothes and tore her finger nails on the bed. Constant expression of terror on face. Incessant thirst was present but attempts to drink not only caused vomiting but spasm of the glottis. The whole musculature of the throat became spasmodically contracted and the water was forcibly ejected. Vomiting of dark bloody material occurred.⁷

5. G. K., a Japanese, male, age 32, died of rabies at Los Angeles, August 6, 1913.

This patient was bitten on the arms by a rabid dog at San Bernardino, on June 30, 1913. On August 4th, he had distinct symptoms of rabies. This man had been instructed, after the biting, to take the Pasteur treatment, furnished by the State Board of Health at Los Angeles, but he had not followed the advice. There was no autopsy.

6. P. G., of Lincoln, a man, age 57, died of rabies at Auburn, November 15, 1913.

* Read at the Forty-fifth Annual Meeting of the Medical Society of the State of California, Fresno, April, 1916.